

NEW SPECIES IN THE *ANTHONOMUS SALVINI* GROUP (COLEOPTERA:
CURCULIONIDAE: ANTHONOMINI)

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Abstract.—Three neotropical anthonomine weevil species, *Anthonomus salvini* Burke (Brazil, Costa Rica, México, Nicaragua, Venezuela) and two new species, *A. stockwelli* (Panamá) and *A. werneri* (Brazil), are assigned to the *Anthonomus salvini* group. The group and included species are described and a key to the species is presented. The habitus and legs of the three species and the aedeagi of two of the species are illustrated with photographs. The *A. salvini* group is hypothesized to be most closely related to the *A. marmoratus* group.

Key Words: Coleoptera, Curculionoidea, Curculionidae, Anthonomini, *Anthonomus salvini*, *Anthonomus stockwelli*, *Anthonomus werneri*, *Luehea*, Tiliaceae

Anthonomus salvini Burke (1979) was described from specimens from Costa Rica reared from flower buds of *Luehea speciosa* Willd. (Tiliaceae). The species was said to closely resemble an undescribed species from Panamá, but these two species were said “. . . not [to] appear to be especially closely related to any other species of *Anthonomus* and probably [to] form a distinct species group within the genus.” The purpose of this paper is to describe that undescribed species, also known to be associated with *Luehea*, along with a third species, previously undescribed, from Brazil. These three species form the *Anthonomus salvini* group.

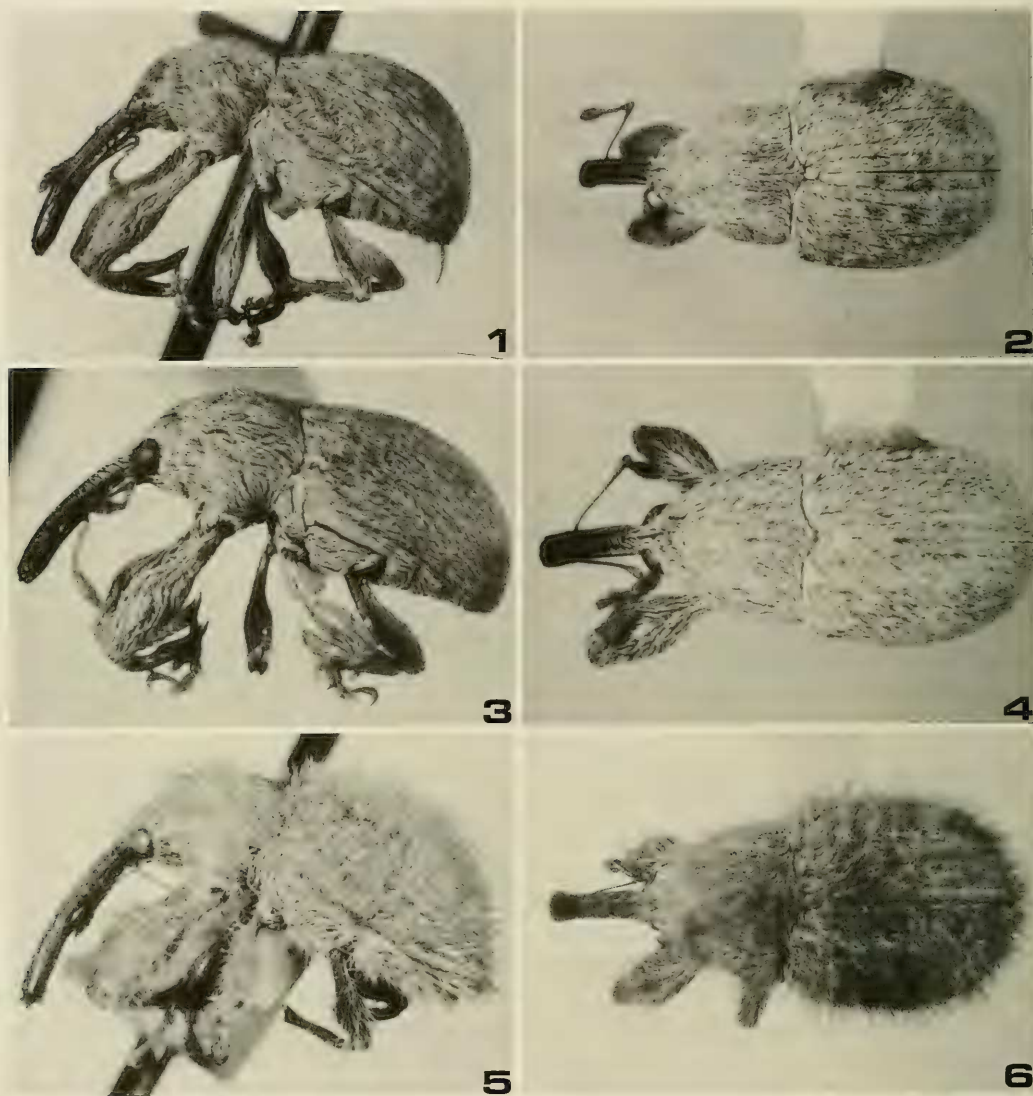
MATERIALS AND METHODS

Specimens of 84 adult weevils were examined. These are from the collections of the following individuals and institutions (abbreviations identify the collections in the text): Auburn University Entomological Collections, Auburn University, Alabama, USA (AUEM); Collection of C. W. O'Brien,

Tallahassee, Florida, USA (CWOB); Collection of H. P. Stockwell, Smithsonian Tropical Research Institute, Panamá (HPSC); Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZSP); Texas A&M University, College Station, Texas, USA (TAMU); National Museum of Natural History, Washington, D.C., USA (USNM). Measurements were made according to criteria described by Clark (1994). Exact label data are cited for types. Separate labels are indicated by brackets ([]), each separate line by a virgule (/).

THE *ANTHONOMUS SALVINI* GROUP

Recognition.—The species in the *A. salvini* group (Figs. 1–6) are middle-sized (length 2.16–4.70 mm) *Anthonomus* with 7-segmented antennal funiculus, ferruginous integument and ochreous to ferruginous-testaceous scales on the head, rostrum, pronotum, elytra and legs. The profemur is strongly inflated and much larger than the meso- and metafemora; it bears a large ventral tooth and a smaller, more anteroventral

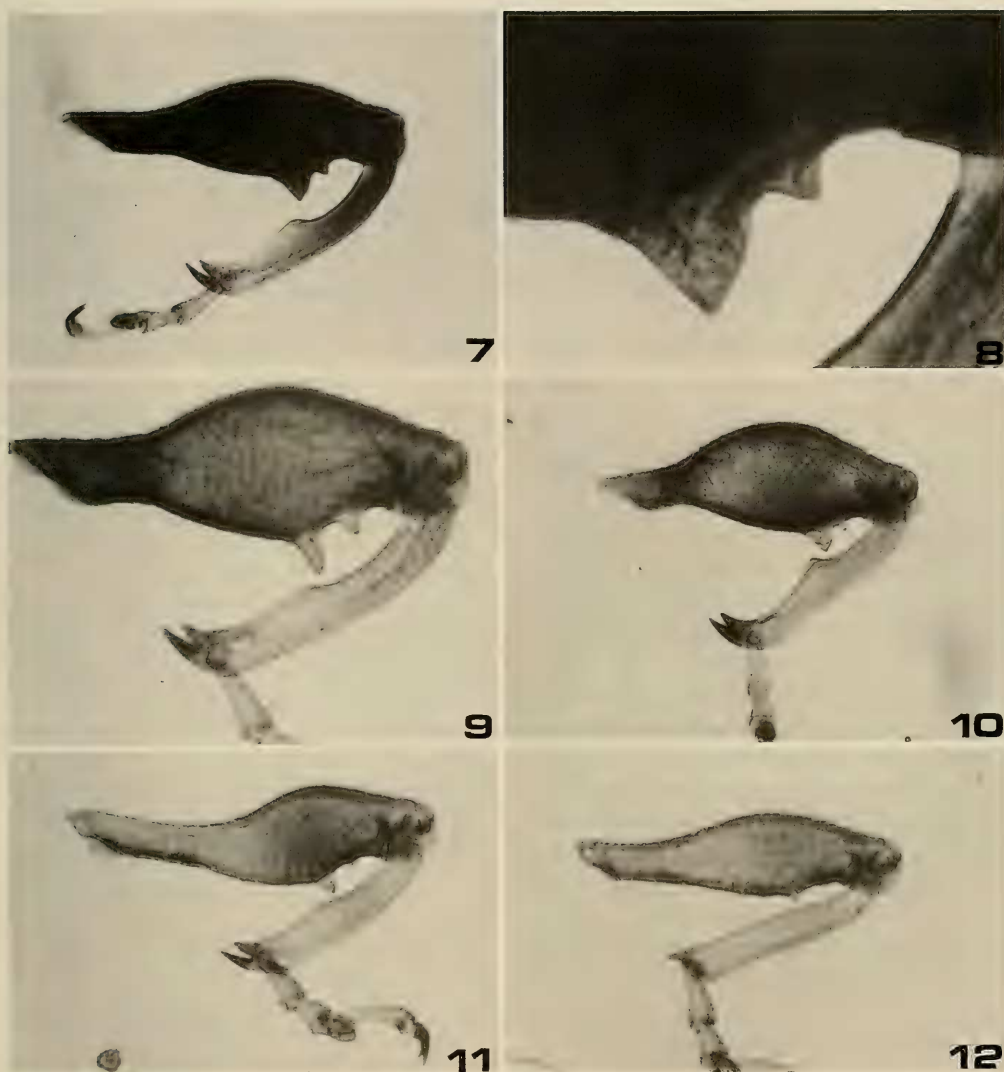


Figs 1-6. *Anthonomus salvini* group members, habitus, lateral and dorsal views. 1, 2, *A. salvini*, male, Granada, Nicaragua. 3, 4, *A. stockwelli*, male, holotype. 5, 6, *A. weneri*, female, holotype.

tooth (Figs. 7-10), both on a common base in two of the species (Figs. 7, 8, 10). In addition, the pro- and mesotibiae each have a well-developed ventral prominence, a long, slender, slightly curved apical uncus and a large, stout, preapical spine (Figs. 7, 9-11) and the pronotum has a narrow longitudinal carina in the basal $\frac{1}{2}$.

The species also share the following characters: *Head*: eyes round, slightly, nearly evenly convex, separated by distance ca.

0.8 \times width of rostrum at base. *Rostrum*: strongly tricarinate. *Prothorax*: pronotum with narrow median carina in basal $\frac{1}{2}$. *Elytra*: interstriae subequal in width and slight convexity. *Legs*: profemur strongly inflated; protibia with well-developed midventral prominence (Figs. 7, 9, 10); pro- and mesotibiae each with a long, slender, slightly curved apical uncus and a large, stout, preapical spine (Figs. 7, 9-11); metatibia straight, with slender apical mucro (Fig. 12).



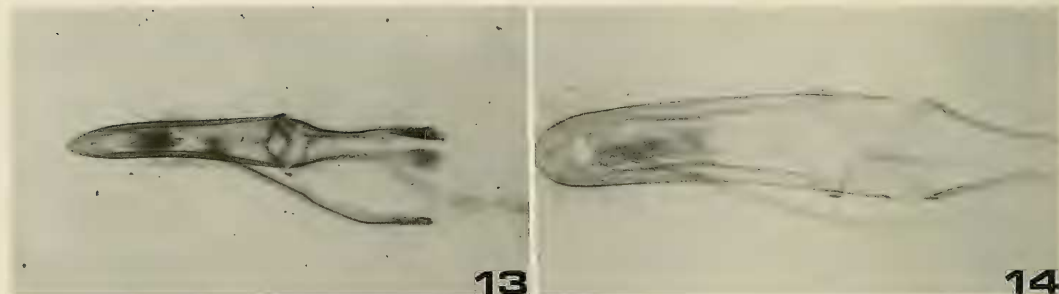
Figs 7–12. *Anthonomus salvini* group members, legs. 7, 8, prothoracic leg, *A. salvini*, female. 9, Prothoracic leg, *A. stockwelli*, female. 10, Prothoracic leg, *A. weneri*, female. 11, Mesothoracic leg, *A. stockwelli*, female. 12, Metathoracic leg, *A. stockwelli*, female.

Plant associations.—Two of the species in the *A. salvini* group are reported from plants in the genus *Luehea* Willd. (Tiliaceae). One of these, *A. salvini*, is represented by specimens reared from flower buds of the host plant (Burke 1979:208). A single Brazilian specimen of *A. salvini* is labelled “Sapindaceae sp.”

Distribution.—The species in the *A. salvini* group are known from Brazil, Costa

Rica, México, Nicaragua, Panamá and Venezuela.

Relationships.—The *A. salvini* group appears to be most closely related to the *A. marmoratus* group. The greatly inflated profemur and the structure of the profemoral teeth of the species of the *A. salvini* group are similar to those of some of the species in the *A. marmoratus* group (cf. Clark 1992, Figs. 18, 19). Other anthom-



Figs. 13–14. *Anthonomus salvini* group members, aedeagus. 13, *A. salvini*, Grenada, Nicaragua. 14, *A. stockwelli*, holotype.

omines also have similar teeth, however. More interesting is the similarity in armature of the apices of the pro- and mesotibiae. The pro- and mesotibiae of some members of the *A. marmoratus* group, like the species in the *A. salvini* group, have unusually large (for anthonomines) apical unci. More distinctive are the large ventral, preapical spines that characterize some of the species in the *A. marmoratus* group and the similar but even larger spines in the *A. salvini* group (cf. Figs. 7, 9–11, and Clark 1992, Figs. 18–20). Strictly speaking, these similarities indicate that the *A. salvini* group is sister to only a subgroup of the *A. marmoratus* group. This relationship is called into question, however, by the fact that the development of the preapical tooth exhibits a more marked sexual dimorphism in the *A. marmoratus* group (Clark 1992). The species in the *A. salvini* group do not have fascicles of broad, rounded scales around the elytral stria punctures like those in members of the *A. marmoratus* group. Nor do the species in the *A. marmoratus* group have a pronotal carina. Known hosts of members of the *A. marmoratus* group are members of the plant family Fabaceae (Clark 1992).

KEY TO SPECIES IN THE *ANTHONOMUS SALVINI* GROUP

1. Body with admixture of long, slender, attenuate, ferrugino-testaceous, recumbent scales and similar but slightly longer, suberect scales that

- coalesce into loose tufts on prothorax and elytra (Figs. 5, 6) *A. weneri*, n. sp.
- Body with uniform vestiture of slender, ochreous, recumbent scales, without suberect scales (Figs. 1–4) 2
- 2. Profemur with a large, broadly triangular ventral tooth and a smaller, more distal ventral tooth sharing a common base (Figs. 7, 8); elytra strongly convex (Fig. 1); aedeagus narrowly rounded at apex (Fig. 13)
 *A. salvini* Burke
- Profemur with a long, slender ventral tooth and a smaller, widely separated, more distal ventral tooth that does not share a common base (Fig. 9); elytra less strongly convex (Fig. 3); aedeagus more broadly rounded at apex (Fig. 14)
 *A. stockwelli*, n. sp.

Anthonomus salvini Burke (Figs. 1, 2, 7, 8, 13)

Anthonomus salvini Burke 1979:206, 208. Holotype (male). COSTA RICA. Guanacaste: [Santa Rosa National Park/ Guanacaste Prov., COSTA RICA. D. H. Janzen 12 Dec/ 1978–10 Jan 1979.] [ex flower buds/ *Lueheal speciosa*] [HOLOTYPE/ *Anthonomus/ salvini/ Burke*] (USNM).

Recognition characters.—Burke (1979: 206, 208) provided a detailed description of *A. salvini*, asserting that the species “. . . may be easily recognized by its robust form, uniformly distributed pubescence, median carina on the pronotum and greatly enlarged profemur with the two teeth distinctly separated.” The species is distin-

guished from the other members of the *A. salvini* group by the following combination of characters: Body with uniform vestiture of slender, ochreous, recumbent scales, without suberect scales (Figs. 1–4); profemur with a large, broadly triangular ventral tooth and a smaller, more distal ventral tooth sharing a common base (Figs. 7, 8); elytra strongly convex (Fig. 1); aedeagus narrowly rounded at apex (Fig. 13)

Distribution.—In addition to 10 specimens from Santa Rosa National Park, Guanacaste Province, Costa Rica, including one labelled “PARATYPE” (TAMU), 52 specimens of *A. salvini* from the following localities were examined. Brazil. Goiás: Jataí (1 MZSP). Mato Grosso: Sinop (1 CWOB). Santa Catarina: Nova Teutônia (1 ELSC, 1 MZSP). São Paulo: Piracicaba (37 AUEM). México. Yucatán: 28 km. N Beanchen (1 CWOB). Nicaragua. Granada: Granada (8 TAMU). Rivas: 10 km. S Sapoa (1 CWOB). Venezuela. Anzoátegui: 18 km. E Periquan (1 CWOB).

Plant associations.—Literature and label data indicate that *A. salvini* is associated with the following plants:

Sapindaceae

sp. (Nova Teutônia, Santa Catarina, Brazil)

Tiliaceae

sp. (Granada, Granada, Nicaragua)

Luehea divaricata Mart. (Piracicaba, São Paulo, Brazil, reared from flower buds [Geraldo Papa, *in lit.*])

Luehea speciosa Willd. (Santa Rosa National Park, Guanacaste, Costa Rica, reared from flower buds [Burke 1979:208])

Anthonomus stockwelli Clark,

NEW SPECIES

(Figs. 3, 4, 9, 11, 12, 14)

Type series.—Holotype (male). PANAMÁ: Panamá [PANAMÁ: Pma. Prov./ 9 km. SE Bayano Bridge/ 9°10'N, 78°46'W/ 8 Sept '74 H. Stockwell] (USNM). Para-

types (18). PANAMÁ: Bocas del Toro [PANAMA, Bocas del/ Toro, Miramar, sea/ level, 82°15'W, 9°N/ 30 Mar. 1979 H. Wolda] [Anthonomus/ # 7] (1 female CWOB). PANAMÁ: Panamá [PANAMÁ: Pma. Prov./ 9 km. SE Bayano Bridge/ 9°10'N, 78°46'W/ 8 Sept '74 H. Stockwell] (3 males, 1 female HPSC); [Panama: Canal Zone/ Albrook Forest Site/ Fort Clayton] [Lot No. 167/ Jan. 30/31, 1968/ R. Hutton/ Black light trap] [University/ Arkansas/ Collection] (4 females CWOB); [Panama: Canal Zone/ Albrook Forest Site/ Fort Clayton] [Lot No. 168/ Jan. 30/31, 1968/ R. Hutton/ Black light trap] [University/ Arkansas/ Collection] (1 male, 2 females CWOB); [Panama: Canal Zone/ Albrook Forest Site/ Fort Clayton] [Lot No. 171/ Jan. 15/16, 1968/ R. Hutton/ Black light trap] [University/ Arkansas/ Collection] (1 male CWOB); [PANAMÁ: ZONA DEL CANAL;/ Pipeline Road, 7/ km NW of Gamboa./ Lubin 24 Oct 1975] [Canopy Sample/ Luehea seemannii] (1 male HPSC); [PANAMA, Canal/ Zone, Margarita/ May 30, 1957/ at light] (1 male TAMU); [Panamá C. Z./ Margarita, 4 km NE/ 4 May '75/ H. Stockwell] (1 female HPSC); [PANAMÁ: C. Z./ 5 mi. NW Gamboa/ 24 Oct. '75/ H. P. Stockwell] [Malathion/ Canopy fog] (2 females HPSC).

Recognition characters.—Most, if not all of the specimens in the type series of *A. stockwelli* are the ones Burke (1979:208) referred to as representing “. . . an undescribed species from Panamá which differ . . . [from *A. salvini*] by their smaller size (2.5–3.0 mm, av. 2.7 mm, n = 5), the largest profemoral tooth being broadly triangular, and the two profemoral teeth being more widely separated.”

Unfortunately, this statement attributes the “broadly triangular” profemoral tooth to the undescribed species instead of to *A. salvini* when in fact, it is *A. salvini* that has the largest profemoral tooth broadly triangular (Figs. 7, 8), as the description of the species states. The larger profemoral tooth

of the new species is much more slender (Fig. 9). Furthermore, although the two profemoral teeth of *A. salvini* were also described as "distinctly separated," the smaller tooth of *A. salvini* could as well be considered to be a separate prominence that shares a common base with the larger tooth (Figs. 7, 8). In the new species, by contrast, the smaller of the two profemoral teeth is actually separated from the larger one, and the two do not share a common base (Fig. 9).

The new species also differs from *A. salvini* by the shorter, stouter, less strongly curved rostrum (cf. Figs. 1, 3), the less strongly convex elytra (cf. Figs. 1, 3), and by the broader aedeagus with the more bluntly rounded apex (cf. Figs. 13, 14).

Male (Figs. 1, 2).—*Length*: 2.16–2.88 mm (mean = 2.50, n = 8). *Width*: 1.16–1.36 mm (mean = 1.30, n = 8). *Rostrum*: length 1.20–1.36 (mean = 1.27, n = 8) × pronotal length; straight basally, slightly curved apically; apical length of apical portion 31–37% (mean = 35%, n = 8) of total rostral length. *Prothorax*: with long, slender, slightly attenuate, uniformly recumbent, ochreous scales. *Elytra*: interstria 3 widened and slightly elevated at extreme base; interstriae with uniform vestiture of long, slender scales like those on pronotum. *Abdomen*: sternum 5 slightly shorter than sternum 4. *Legs* (cf. Figs. 9, 11, 12): with long, slender, uniformly recumbent scales; profemur ca. 1.5× wider than metafemur, with a long, slender ventral tooth and a shorter, slightly more slender, entirely separate, more distal tooth; meso- and metafemora each with a short, conical, ventral tooth and a minute, more distal tooth, metafemoral teeth; mesotibia with slight mid-ventral prominence. *Genitalia* (Fig. 14): aedeagus slightly, broadly constricted medially, bluntly rounded apically; tegmen with long dorsal parameres.

Female.—*Length*: 2.20–2.88 mm (mean = 2.58, n = 10). *Width*: 1.16–2.88 mm (mean = 1.50, n = 10). *Rostrum*: slightly longer and more slender than in male, even-

ly curved from base to tip; length 1.28–1.59 (mean = 1.43, n = 10) × pronotal length; length of apical portion 30–43% (mean = 38%, n = 10) of total rostral length. *Legs* (Figs. 9, 11, 12): protibial and mesotibial unci and preapical spines slightly larger, metatibial mucro smaller than male.

Distribution.—*Anthonomus stockwelli* is known only from the type series from Panamá.

Plant associations.—Label data indicate that *A. stockwelli* is associated with the following:

Tiliaceae

Luehea seemannii Tr. & Pl. (7 km NW of Gamboa, Panamá, Panamá)

Etymology.—*Anthonomus stockwelli* is named after the collector of many of the specimens in the type series, Dr. Henry P. Stockwell of Ancon, Panamá.

Anthonomus weneri Clark, NEW SPECIES (Figs. 5, 6, 10)

Type series.—Holotype (female). BRAZIL: São Paulo: [Faz. Pau d'Alho/ Itú, SP, Brasil/ II.1963 F. Werner/ U. Martins col.] [PHOTO] (MZSP). Paratypes (2). BRAZIL. São Paulo: 1 female [Barueri/ SP, Brazil/ 8.XI.196/ K. Lenko col.] (MZSP); 1 female [Faz. Pau d'Alho/ Itu, SP/ 1–5.XI.1961/ U. R. Martins col.] (MZSP).

Recognition characters.—*Anthonomus weneri* is distinguished from the other members of the *A. salvini* group and from all other known anthonomines by the admixture of long, slender, attenuate, ferruginous-testaceous, recumbent scales and similar but slightly longer, suberect scales that coalesce into loose tufts on the prothorax and elytra (Figs. 5, 6). It also differs from *A. salvini* and *A. stockwelli* by having the extreme base of elytral interstria 3 slightly widened but not elevated, and from *A. stockwelli* by the broadly triangular profemoral tooth and a smaller, more distal tooth on a common base (Fig. 10) as in *A. salvini* (cf. Figs. 7, 8).

Male.—Unknown.

Female (Figs. 5, 6).—*Length*: 4.08–4.40 mm (mean = 4.20, n = 3). *Width*: 1.10–1.16 mm (mean = 1.13, n = 3). *Rostrum*: length 1.28–1.59 (mean = 1.43, n = 3) × pronotal length; slightly, evenly curved; length of apical portion 44–53% (mean = 47%, n = 3) of total rostral length. *Prothorax*: with admixture of long, slender, attenuate, ferrugino-testaceous, recumbent scales and with similar but slightly longer, suberect scales that coalesce into loose tufts throughout. *Elytra*: interstria 3 slightly widened, but not elevated at extreme base; interstriae with long, slender, recumbent ferrugino-testaceous scales and with longer, suberect scales that form loose tufts like those on pronotum. *Abdomen*: sternum 5 slightly longer than sternum 4. *Legs*: with admixture of recumbent and suberect scales; profemur ca. 1.9× wider than metafemur, with a large, broadly triangular tooth and a smaller, conical outer tooth on a common base (Fig. 10); mesofemur with a single, conical ventral tooth; metafemur unarmed; mesotibia with midventral prominence bluntly rounded.

Distribution.—*Anthonomus weneri* is

known only from the type series from Brazil.

Plant associations.—Unknown.

Etymology.—*Anthonomus weneri* is named after one of the collectors of the holotype, the late Floyd G. Werner.

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